

Laboratory 8 (Deadline 19th Mar 2023, 11.59PM)

Individual assignment

Implement FIFO, LRU and Random page replacement policies:

There are fewer physical frames in main memory than logical pages. Hence all pages needed in the system may not be in physical memory. In such a case, swap space can be used when needed to bring in a swapped out page in main memory and a victim frame is swapped out. A system has a few addressable pages (say 60 in the entire system), few frames in main memory (say 20) and a few disk blocks (say 60) for swap space. The 3 numbers will be provided as command line args to your program. Implement FIFO, LRU and Random page replacement policies which selects a victim page based on the arrival of the page into main memory. When a requested page is found to be not available in main memory, the event is termed as a **page fault**.

Fourth argument to your executable file will be filename. In this file the sequence of page requests will be given. You will start with a nil map of logical pages to frames and build it on demand as and when requests arrive.

A sample page requests file is given

https://drive.google.com/file/d/1m-hoGYk_J9TpKpWwc6lInL4aETrzUQvG/view?usp=share_link

You need to try with 5 different files and 5 different configurations(i.e. different page sizes and frame sizes)

You are required to plot a graph for the number of page faults (on y-axis) against the total number of frames (on x-axis) for a given request pattern file. Use gnuplot to plot the graph.

Submit: a single zip file (format: <roll-number>_lab7.zip) with all required source files and the completed report with all the required analysis. The evaluator will simply unzip the submission, and run the file with different process data files. If the desired output is not seen, you will not be awarded any marks.